Market Segment Report
VIETNAM

AIRPORT & GROUND SUPPORT EQUPMENT (AGSE) IN VIETNAM

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The purpose of this report is two-fold: (i) to review recent developments of the airport infrastructure sector in Vietnam and (ii) to highlight opportunities for U.S. exporters so they can gain an overview of the sector and formulate appropriate strategies for penetrating into the Vietnamese market.

The information and figures in this report were gathered from various official publications, press interviews and press releases from the Civil Aviation Administration of Vietnam (CAAV), its subsidiaries and affiliates, other local and foreign businesses, as well as relevant government agencies involved in the aviation sector.

Vietnam is soon expected to take off as the fourth largest aviation market in Southeast Asia
(Photo: Airliners.net)

1. Executive Summary

The aviation industry in Vietnam comes under the principal jurisdiction and management of the Civil Aviation Administration of Vietnam (CAAV), which belongs to the Ministry of Transport. The major air transport carrier of the country is Vietnam Airlines, accounting for 42 percent of the international passenger traffic and 8 percent of the domestic passenger traffic.

According to CAAV, in 2004, the total airport through-put passengers reached 12 million and is expected to increase to over 20 million by 2010. The total through-put air cargo is estimated to rise around 13.8 percent each year, achieving approximately 576,000 tons in 2010.

At present, there are 23 domestic and 72 international air routes operating in Vietnam's Flight Information Regions (FIR). The country currently operates a network of 21 major civil airports

including three international ones: Noi Bai in the north (Hanoi), Danang in the center and Tan Son Nhat in the south (Ho Chi Minh City). Tan Son Nhat with a capacity of 5 million passengers per year is the largest airport in country, handling about 75 percent of the country's international passenger traffic.

The Vietnamese government is committed to opening its aviation sector to foreign carriers. This liberalization, however, will be carefully staged, given the weakness of the domestic air transport industry. The government will phase in each step in accordance with its current and future international commitments under the CLMV (Cambodia, Laos, Myanmar, Vietnam), ASEAN, APEC, and the WTO.

For the time being, Vietnam Airlines and Pacific Airlines are the two major air carriers in Vietnam and until 2008 the government is not going to issue any license for domestic operation to any other air carriers to avoid over-competition. After that, the aviation sector is expected to open to private and foreign companies on certain conditions.

According to Vietnam's long-term development plan by the year 2010, to meet the surging demand for air transport, Vietnam will invest more than USD $1.3 billion in airport modernization, expansion and rehabilitation in order to accomplish an efficient network of 21 airports in operation. During the period of 2010 – 2020, several other airports will be constructed or upgraded including the Long Thanh and Chu Lai (International), Quang Ninh, Lao Cai, and Cao Bang (Domestic).

The primary sources of financing for this development will come from the national budget, foreign official development assistance (ODA) loans, and export credits.

The airport and ground support equipment market in Vietnam can be categorized into three segments which fall under the responsibility of specific organizations in the aviation sector:

(1) Terminal equipment and facilities are normally procured and owned by the regional airport authorities;

(2) Ground support & handling equipment are under the responsibilities of both Vietnam Airlines Corporation's airport ground services subsidiaries and regional airport authorities; and

(3) Air traffic control equipment and systems are under the control of Vietnam Air Traffic Management (VATM). Some other types of equipment and systems may be covered by the regional airport authorities

Procurement in the aviation sector is mainly carried out through open or limited local or international competitive bidding. Depending on the availability of funds, sources of funds, levels of quality and reliability requirements, buyers may choose to use suitable technologies and expertise from one or more countries, especially those with demonstrated previous success in Vietnam and Southeast Asia.

U.S. companies are generally most competitive in cargo and airport terminal equipment, ground support and handling equipment, and air traffic control equipment and systems. U.S. firms are also very competitive in information technology systems and services for aviation applications. American equipment and service suppliers will find significant export opportunities in a number of upcoming and ongoing major airport projects such as Noi Bai Airport (T2 new terminal), Tan Son Nhat Airport, Danang Airport (new international terminal), Long Thanh International Airport as well as some other smaller projects in which equipment contracts are open to both foreign and local contractors.

2. Market Overview

2.1 Aviation Industry Organization – CAAV and its subsidiaries

The aviation industry in Vietnam comes under the principal jurisdiction and management of the Civil Aviation Administration of Vietnam (CAAV), which, as a government agency, reports to the Ministry of Transport. CAAV consists of a management board, headed by one General Director and two Deputy General Directors. CAAV's Director General is also a Vice Minister of Transport, specifically in charge of the aviation sector. At present, CAAV has eight key administrative and operational departments overseeing a number of business subsidiaries under CAAV's direct supervision as indicated below:

Group 1 : CAAV Administrative and Operational Departments

- General Administration Department
- Inspection Department
- Planning & Investment Department
- Science and Technology Department
- Human Resource Department
- Aviation Safety Department
- Aviation Security Department
- Legal Department

Group 2 : Business Subsidiaries Under the Direct Supervision of CAAV

- **Northern Airports Authority (NAA)**: A state-owned enterprise operating under the supervision of CAAV to implement the state authority at the northern regional airports. NAA is responsible for managing and operating the northern region airports and providing aviation and other public services to ensure safe and efficient flight operations for airlines.
- **Middle Airport Authority (MAA)** is similar to NAA in terms of organization and operation, but responsible for the middle region airports.
- **Southern Airport Authority (SAA)** is similar to NAA in terms of organization and operation, but responsible for the southern region airports.
- **Vietnam Air Traffic Management (VATM)**: A state-owned enterprise operating under the supervision of CAAV to manage, operate and provide air traffic services and other supporting services to all civil aircraft operating in the nationwide airports, the airspace under the sovereignty of Vietnam as well as in the Flight Information Regions designated by the International Civil Aviation Organization (ICAO). VATM has 5 affiliated members including Northern Region Air Traffic Services, Middle Region Air Traffic Services, Southern Region Air Traffic Services, Air Traffic Command & Coordination Center and Air Traffic Technical Services Center.

2.2 Aviation Industry Organization – CAAV and Domestic Airlines

At present, there are two major domestic airlines in Vietnam and several small air service companies operating in Vietnam including:

- **Vietnam Airlines (VNA):** VNA is the national air-transport carrier, reporting directly to the Prime Minister's Office. This state owed airlines' fleet currently includes 38 aircraft consisting of eight Boeing 777-200Ers (four leased and four purchased), three Boeing 767-300s, ten Airbus A320-214s, six Airbus A321-131s, nine ATR-72s, and two Forker-70s. In 2005, the airlines signed two contracts to purchase 10 Airbus 321s and four Boeing 7E7s. In its projection toward 2010, VNA plans to double its existing fleet to 75 airliners and increase its ownership ratio to 60-70 percent.

Vietnam Airlines' Fleet in Tan Son Nhat International Airport in 2005

- **Pacific Airlines (PA):** PA, Vietnam's second air-transport carrier established in 1991, used to be a USD $2.7 million joint venture among several Vietnamese state-owned enterprises with Vietnam Airlines and its subsidiaries as the largest shareholder with a 86% stake. PA's fleet includes four leased Boeing 737-400s and two Airbus A320-200s. In December 2004, the company reported a big loss of about USD $14 million and may have gone bankrupt if the government did not step in with a bail-out plan in which the Ministry of Finance (MoF), on behalf of the government, took over VNA's stake in PA (the other two shareholders are Saigon Tourist Holding Corp. and Trading Brokerage and Transport Communication Development Investment Company) in January 2005 with a plan to restructure the airlines with the participation of private equity investors. Tamesek Holdings (Singapore) valued PA at about USD $167 million and is willing to inject USD $50 million as an equity investment. This proposal is now still pending the government's final approval. Since the beginning of 2005 to date, PA's performance has become quite positive with an increase of the average seat occupancy rates to 85% (domestic flights) and 70% (international flights). PA's management board has just approved new leases of two Boeing 737-400s in 2006 on 5-7 year terms.

  After PA's recovery from this financial trouble, the government plans to auction some of its share in the open market but will still hold a prevailing stake. PA currently operates both domestic and international routes to Kaohsuing and Taipei.

Pacific Airlines' Airbus 320 at Tan Son Nhat International Airport

- **Vietnam Air Service Company (VASCO):** VASCO, a subsidiary of VNA, currently provides aviation services such as cargo delivery, search and rescue, chartered flight services, tourism, aerial photography, medical emergencies, etc. In 2004, VASCO was licensed by CAAV to operate domestic short-haul flights under 500 km. Since May 2004, VASCO has started three domestic routes (HCMC-Camau, HCMC-Con Dao and Vung Tau – Con Dao), using leased AN38 aircraft (capable of carrying 26 passengers to the maximum) and ATR 72. In addition, VASCO also handles chartered flights and air-cargo transportation. At present, VNA is working on a proposal to convert VASCO into an independent limited liability company as a third independent air carrier in Vietnam for the government's approval. The government announced in October 2005, however, that it is not going to license a third independent airlines over the next three to four years to ensure healthy competition and efficiency in the market.

VASCO's Antonov An-38-120

- **Northern Service Flight Company (NFC)**: A state-owned company under the Ministry of Defense, providing helicopter services for the oil & gas industry, tourism, air-cargo transport, search & rescue, and aerial photographing. The company covers a region from Danang northward.

- **Southern Service Flight Company (SFC):** A state-owned company under the Ministry of Defense, providing helicopter services for the oil & gas industry, tourism, air-cargo transport, search & rescue, and aerial photographing. The company covers a region from Danang southward. SFC presently owns and operates a fleet of 12 helicopters with three Super Pumas SA332L2s, one Puma SA33OJ, one EC 155B, one MI-8, one MI-17, and five MI-172s, mainly serving offshore oil and gas exploration in Vung Tau.

SFC's Helicopter Fleet in Vung Tau Airport

2.2 Aviation Sector Profile – Demand, Demand Development and Trends

Economists predict that Vietnam's GDP is expected to grow at 7 – 8 percent annually over the next ten years, which will create a massive need for air transport services and aviation infrastructure. According to CAAV, fueled by the expansion of international trade, foreign direct investment and the tourism industry, the total airport through-put passengers in Vietnam reached 12 million in 2004 and is expected grow about 10 – 15 % annually, increasing to over 20 million by 2010. The total through-put air cargo is estimated to rise around 13.8 per year, achieving approximately 576,000 tons in 2010.

2.3 Aviation Sector Profile – Supply, Supply Development and Trends,

At present, there are 23 domestic and 72 international air routes operated by 28 domestic and foreign airlines in Vietnam's Flight Information Regions (FIR). Vietnam Airlines is retaining about 42 percent of the international passenger market and 85 percent of the domestic passenger market.

In terms of infrastructure, Vietnam currently has over 300 airports, aerodromes and airfields in various sizes and physical conditions. Most of the airports were built before 1975 and about 52 of them are in need of upgrades or are planned to be rebuilt. At present, the country operates a network of 21 major civil airports, including three international ones – Noi Bai in the north (Hanoi), Danang in the center and Tan Son Nhat in the south (Ho Chi Minh City). The profile of this existing civil airport network is described in the following table:

Airport	**Province / City**	**Type**	**Passenger Capacity** (million / year)	**Runway Length & Width** (meters)
NAA				
1. Dien Bien Airport	Lai Chau	Domestic	NA	1,430 – 30 m
2. Na San Airport	Son La	Domestic	NA	2,400 – 45 m
3. Cat Bi Airport	Hai Phong	Domestic	NA	2,400 – 50 m
4. Noi Bai Airport	Hanoi	International*	4 million	3,200 – 45 m **
5. Vinh Airport	Vinh	Domestic	NA	2,300 – 30 m
6. Dong Hoi Airport	Quang Binh	Domestic*	NA	2,400 – 30 m
MAA				
7. Phu Bai Airport	Hue	Domestic	NA	2,700 – 37 m
8. Danang Airport	Danang	International	1.5 million	3,048 – 45 m ***
9. Pleiku Airport	Gia Rai	Domestic	NA	1,830 – 36 m
10. Chu Lai Airport	Quang Nam	Domestic*	NA	3,048 – 45 m
11. Phu Cat Airport	Binh Dinh	Domestic	NA	3,048 – 45 m
12. Tuy Hoa Airport	Phu Yen	Domestic	NA	3,048 – 45 m
13. Cam Ranh Airport	Khanh Hoa	Domestic *	NA	3,048 – 45 m
SAA				
14. Ban Me Thuot	Dac Lac	Domestic	NA	3,000 – 45 m
15. Lien Khuong Airport	Lam Dong	Domestic*	NA	2,352 – 37 m
16. Tan Son Nhat Airport	HCMC	International	7 million	3,800 – 45 m ***
17. Rach Gia Airport	Kien Giang	Domestic*	NA	1,500 – 30 m
18. Ca Mau Airport	Ca Mau	Domestic	NA	1,500 – 30 m
19. Phu Quoc Airport	Kien Giang	Domestic*	NA	1,946 – 30 m
20. Can Tho Airport	Can Tho	Domestic*	NA	2,400 – 45 m
21. Con Dao Airport	Con Dao	Domestic *	NA	1,830 – 30 m
22. Long Thanh Airport	Dong Nai	International	NA	4,000 – 60 m ****

* *Existing domestic airports scheduled to be modernized and upgraded by 2010*

** *In 2004, a new runway of 3,800 – 45 m was built and completed at the Noi Bai Airport*

*** The Noi Bai, Danang & Tan Son Nhat Airports currently have two runways

**** The Long Thanh Airport is scheduled for construction from scratch by 2010

A Draft of Vietnam's of Airport Network by 2025 (Source: Saigon Times Weekly)

In terms of passenger volume, SAA retains the lion's share in the national total, accounting for 55 percent while NAA holds 35 percent and MAA makes up the remaining 10 percent.

Improving the country's airports is one of the government's top development priorities because it is a prerequisite to economic growth, industrialization and tourism development. According to CAAV's long term development strategy through the year 2010, to meet the surging demand for air transport, Vietnam will invest more than USD $1.3 billion in airport modernization, expansion and rehabilitation in order to accomplish a network of 21 airports in efficient operation. During the period of 2010 – 2020, several other airports will be constructed or upgraded, including the Long Thanh and Chu Lai (International), Quang Ninh, Lao Cai, and Cao Bang (Domestic). This process includes the following primary tasks:

- Constructing new international passenger terminals
- Upgrading existing passenger terminals
- Constructing new cargo terminals
- Upgrading and expanding runways, taxiways and apron systems
- Upgrading and expanding the aircraft maintenance centers in Noi Bai and Tan Son Nhat
- Upgrading and expanding airfield support facilities
- Modernizing air traffic control and radar systems

The primary sources of finance for this development will come from the national state budget, foreign official development assistance (ODA) loans, other commercial bank loans, export credits as well as private sector investment.

2.4. Overview of the Airport and Ground Support Equipment Market and its Segments

Given the dynamic growth in the aviation sector as well as CAAV's upgrade and expansion plan, the airport and ground support equipment market in Vietnam is expected to expand significantly over the next few years. Admittedly, however, this market is still very moderate in size compared with other more developed countries in the region such as Singapore, Thailand and Malaysia.

This market may be categorized into three segments that fall under the responsibilities of specific organizations in the aviation sector:

(1) Terminal equipment and facilities such as communication equipment, baggage handling systems, flight information systems, airport security systems, power, air conditioner systems, etc., are normally procured and operated by the relevant airport authorities including NAA, MAA, SAA.

(2) Ground support & handling equipment such as ground power units (GPU), air starter units, passenger boarding bridge systems, passenger steps, baggage conveyors, baggage tractors, container loaders, aircraft towing tractors, air compressor vehicles, fresh water trucks, lavatory trucks, and follow-me cars are normally under the responsibilities of Vietnam Airlines Corporation's airport ground services subsidiaries such as NIAGS, DIAGS and TIAGS as well as NAA, MAA, SAA that offer ground support services in competition with Vietnam Airlines.

(3) Air traffic control equipment and systems such as navigation systems, surveillance and radar systems, telecommunication systems, automatic message switching systems (AMSS) are under the responsibilities of VATM or its subsidiaries in the three regions. Some other types of equipment like landing equipment ILS/DME on runways, runway lighting systems, taxiing guidance signs, stop bar control systems, automatic weather observation systems, etc., are covered by NAA, MAA, SAA.

All three segments have grown during recent years due to the number of airport upgrade and expansion and new terminal projects. This trend is expected to continue over the next few years as several major international airport and terminal projects are being implemented according to CAAV's master plan.

3. Import Market

At present, virtually 99 percent of airport and ground support equipment in Vietnam has to be imported mainly from the U.S., Europe and Japan. Due to a moderate market size, local manufacturing of this type of equipment almost does not exist.

In terms of market development, it is expected that the market size will increase gradually in the near future as the construction on some major airport projects (USD $219 million Tan Son Nhat Terminal, USD $70 million Danang Terminal, USD $35 million Can Tho New Terminal, and the second Noi Bai Terminal) are undertaken.

To our best estimate, U.S. imports in the sector are currently capturing about 20 - 30 percent of the market, depending on the project types. Recently, the market share of U.S. suppliers has increased sharply as more American companies become interested in this market. On top of this, the devaluation of the U.S. dollar makes American exports more competitive than that of European competitors.

4. Competition

4.1 Specific competitive information

Companies supplying airport and ground support equipment in Vietnam are primarily European, American and Japanese who are well known in the market for their advanced technologies, reliability, quality, expertise, experience and services.

European and Japanese suppliers are very active and successful in the market. Many of the leading European firms are from France, Germany and Spain and have been present in the market for a number of years with extensive relationships with key authorities and agencies in the aviation sector. One of the major strengths of European and Japanese suppliers is their technological penetration, aided by their governments' direct support in the form of official development loans (ODA) loans and grants.

American companies have long been respected for their advanced technology, quality and reliability in Vietnam. However, their almost 20-year absence from the market has made it more challenging for U.S. firms to re-enter the market. Recently, more and more U.S. companies have become increasingly interested in the Vietnamese market and their market share has been expanding.

Russia dominated Vietnam's aviation sector before the 1990's. However, unreliability, unstable supply and inefficient services make their products less desirable today. Russia, nevertheless, is still the sole supplier to the military sector, which is entirely controlled by the Ministry of Defense.

4.2 Challenges faced by U.S. companies in competing with other foreign suppliers

In general, American companies are facing two major challenges:

- Most procurement in key airport projects in Vietnam is funded by ODA loans which tie the purchases to the goods and services from donor's countries. Under many circumstances, Vietnamese buyers prefer American made equipment but have no choice because "tied bidding" is a prerequisite of ODA loans and they are unable to have access to other funding sources.

- Corruption is another obstacle American companies frequently encounter in supplying to projects in the aviation sector in Vietnam. Over the last few years, the Vietnamese government has been determined to take strong actions against this bad practice at all levels but the problem is not expected to go away anytime soon. U.S. companies are subject to the Foreign Corrupt Practices Act when pursuing business opportunities in Vietnam.

5. End Users Analysis

5.1 Buyers and End-Users

In the aviation sector, the principal point of contact for discussions on key aviation projects is CAAV and Vietnam Airlines. The buyers and end-users of equipment and services are, however, CAAV's subsidiaries such as NAA, MAA, SAA, NIGAS, and TIAGS. To be successful, American companies need to establish relationships with CAAV, Vietnam Airlines and its relevant subsidiaries.

5.2 Procurement practices

In principle, procurement plans are initiated and proposed by relevant business entities in the aviation sector. These plans have to conform to CAAV's development master plan and policies. Though CAAV is not always a decision maker in all aviation projects, it has strong influence on the development and procurement of key projects. In large airport projects or important procurement projects, proposals are normally initiated by business entities to CAAV, who comments and makes changes (if required) and then submits the proposal to the Prime Minister's office for final approval. For small procurement projects, decisions are commonly made by companies or subsidiaries based on annual plans approved by CAAV or Vietnam Airlines. Given this fact, U.S. firms should work closely at all levels in the sector to maximize their chances of success in the bidding process.

Procurement practices vary from project to project and primarily depend on the value of investment and the sources of finance. In general, finance for airport projects in Vietnam comes from two main sources: bilateral ODA grants or loans from foreign governments (Japan, France, etc.) and the Vietnamese government.

Standard ODA procedures and guidelines of each donor govern procurements under ODA funded projects. In most cases, procurement under bilateral ODA is often "tied," meaning that suppliers from donor countries usually have an edge at winning procurement contracts. Sub-contracting and/or equipment suppliers may be untied even in situations where companies from the donor nation have won the prime contractor roles.

Procurement funded by the state budget is carried out through international or local open competitive bidding, international or local limited competitive bidding, and sole sourcing. The bidding process is governed by the local investment, bidding and procurement regulations.

6. Sales Prospects

6.1 Major projects, government programs, policy changes, new legislation

The Vietnamese government is committed to opening its aviation sector to both local and foreign private carriers. The integration process will be carefully monitored given the current weaknesses of the domestic air transport industry. Vietnam will phase in each step in accordance with the CLMV (Cambodia, Laos, Myanmar, Vietnam) – ASEAN – APEC – WTO path to achieve an open sky market. At present, Vietnam is in the process of liberalizing its air routes with a number of other developing countries such as Laos, Cambodia and Myanmar.

At present, Vietnam has already signed bilateral aviation agreements with more than 50 nations and territories. In April 2004, Vietnam, Laos, Cambodia, and Burma signed a multilateral open skies deal which removed all limitations in the industry and bolstered the aviation development in the sub-

region. A major milestone in the aviation sector, however, is the signing of the U.S – Vietnam Aviation Agreement allowing direct passenger and cargo flights between the two countries. This air deal, effective for five years, allows two airlines of each country to operate direct flights in the first two years and a third airline in the third year. The agreement does not limit the number of cargo flights. 2003 saw about 265,000 passengers on U.S – Vietnam flights and the number is expected to grow by 5-7 percent annually. Presently, United Airlines and American Airlines operate direct flights to HCMC.

In November 2005, the Vietnamese National Assembly discussed amendments to the Civil Aviation Law which was last revised in 1995 and ruled that the aviation sector will be opened to all economic sectors over the next few years. An establishment of a third major airlines, however, will not be allowed until 2008 to avoid over-competition and to boost the competitiveness of both Vietnam Airlines and Pacific Airlines before the market opens.

The open policy in the aviation sector will definitely generate increased demand for air travel in the years ahead. The following airport projects have been selected as first priorities for development:

6.1.1 Noi Bai International Airport in Hanoi (Upgrade & Expansion)

Noi Bai International Airport is the principal airport serving Hanoi, the capital of Vietnam (www.hanoi.gov.vn). The airport is situated just about 23 km from Hanoi via a 4-lane highway. The airport serves both civil and military operations, though military activities are now relatively limited. This airport presently has two 3,200-m runways which are oriented 11/29, permitting non-stop long haul operations. A new T1 passenger terminal of 3,200 square meters, capable of handling 4 million passengers per year was completed in September 2001. T1 terminal was a USD $76 million locally-financed project of which about USD $35 million was spent on equipment.

In 2004, the government approved in principle the construction of a new international terminal (T2) with four stories and total area of 90,000 square meters (sqm), capable of handling 6 million passengers per year. The total investment in this project is estimated at about USD $236 million which may be funded by the Japanese government under an ODA loan program as well as the state budget. Once the T2 terminal is operational, the existing T1 will be used for domestic flights.

T1 Passenger Terminal at Noi Bai International Airport
Completed and Operational in October 2001

In addition, NAA is also investing about USD $26 million in 2005 to install an automatic luggage processing system and four passenger boarding bridges to enhance the service in its existing terminal.

6.1.2 Danang International Airport in Danang (Upgrade & Expansion)

The Danang Airport is the principal airport serving Danang City (www.danang.gov.vn) in the center of Vietnam. The airport, originally built by the French in 1940 and then expanded by the Americans, is located about 3.2 km from the city via a four-lane road. The airport serves both civil and military operations, though military activities are now relatively limited. The airport presently has two 3,048-m runways that are 45 meters in width, oriented at 35/17, and capable of handling big aircraft such as B747s, B767s and A320s in any weather condition. The airport currently has a passenger terminal capable of accommodating one million passengers per year.

This airport is crucial to the development of the center of Vietnam and the government has planned to construct a new international terminal capable of handling four million passengers per year. The feasibility study (F/S) for this project was partially sponsored by the U.S. Trade & Development Agency (TDA) and conducted by PriceWaterCoopers (PWC), a U.S. consulting firm. The first phase of this project is estimated to cost USD $75 million and will increase passenger capacity to four million per year. The complete project capable of handling six million passengers per year is expected to be finished by 2010 and will require a total investment of USD $160 million.

After facing a funding issue over the last few years, CAAV and MAA obtained the government's funding approval in mid-2004. According to this plan, about USD $48 million of the total investment for the first phase will be funded from the government budget. This fund will mainly be spent on construction works normally awarded to local contractors. The remaining USD $27 million is expected to come from local or foreign commercial banks and will be used to acquire necessary equipment for the new terminal. MAA expects that a contract on the detailed technical design of this project will be awarded by the end of 2005. Construction would commence in 2006 after the completion of the detailed technical design.

Existing Passenger Terminal at Dang Nang International Airport in 2005

In addition to the new terminal, CAAV and MAA have also worked on another project to build a new runway at Danang Airport at an estimated cost of USD $32 million, but the source of finance for this project has not been located.

6.1.3 Tan Son Nhat International Airport in Ho Chi Minh City (Upgrade & Expansion)

Tan Son Nhat airport, covering an area of 605 hectares, is the principal airport serving Ho Chi Minh City (HCMC - www.hochiminhcity.gov.vn), the largest metropolitan area with population of about 8 million in the country. The airport is located about 7 km from the city via a four-lane road. This airport is surrounded by urban and semi-urban developments. It presently serves both civil and military operations, though military activities are now relatively limited. The airport presently has two 3,048-m runways that are oriented 07/25 permitting non-stop long haul operations. The airport terminals have been recently upgraded and expanded to accommodate up to 7 million passengers and 100,000 tons of cargo per year. The airport is the largest and busiest in the country, currently accounting for about 75 percent of the country's international passenger traffic and handles a significant share of the country's air cargo.

Existing Tan Son Nhat International Terminal in 2005

New Tan Son Nhat International Terminal to be completed in late 2006

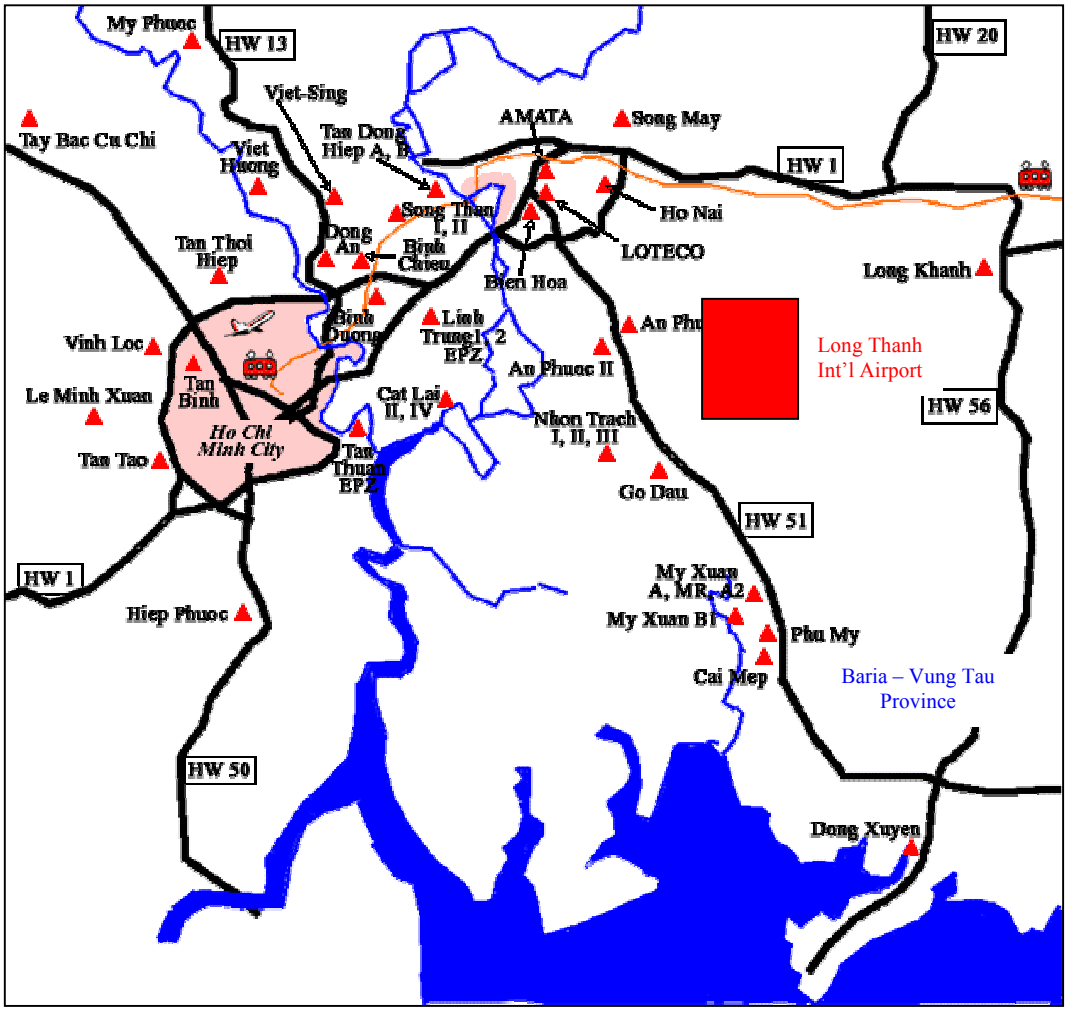
According to CAAV, the passenger traffic passing through Tan Son Nhat airport may reach its maximum capacity in 2006, putting the construction of a new terminal at the top of CAAV's agenda. In 2001, the Prime Minister approved the detailed feasibility study (F/S) on a new international terminal conducted by Japan Airport Consultant (JAC). This new terminal project with the total area of 92.920 sqm, capable of handling 8 million passengers per year, requires USD $219 million in investment of which about USD $190 million is financed by the Japanese government as an ODA loan through Japan Bank of International Cooperation (JBIC). The remaining balance is funded by the Vietnamese government through SAA. Equipment costs are estimated at USD $60 million, construction costs are estimated at USD $120 million and design & architecture, management, loan expenses, land clearance costs are estimated at USD $39 million.

In July 2004, a consortium of Japanese companies including Kajima, Taisei, Obayashi and Meada (KTOM) was awarded an EPC contract for the construction of the new terminal. This project is scheduled for completion and operation in late 2006.

As this project is funded by JBIC's ODA loan, it has to meet the 51 percent Japanese content requirement under JBIC's regulations. Though a number of American firms have been successfully selected as equipment suppliers to this project, some others were turned down by KTOM because of this Japanese content prerequisite.

6.1.4 Long Thanh International Airport Projects (Green Field Development)

CAAV anticipates that the Tan Son Nhat International Airport, which is now being expanded to be able to handle about 15 million passengers per year and is the only one serving international flights in the southern region of Vietnam, will reach maximum capacity in 2013. Therefore, the agency has taken steps to reduce the strain on their facilities while increasing the country's overall international passenger capacity by proposing the construction of the new Long Thanh International Airport. This project is also being developed in a bid to compete with Bangkok and Singapore as a regional transit point in Southeast Asia. The Long Thanh International Airport project will be built on an area of about 5,000 hectares in Long Thanh District, Dong Nai Province, about 48 km southeast of Ho Chi Minh City.



Location of the Long Thanh International Airport Project
To be scheduled for construction and operation during 2010 – 2015

U.S. Commercial Service - HCMC Team and SAA's Officials
at the Site of the Future "Terminal 1" of Long Thanh International Airport in October 2005

In July 2005, the Prime Minister issued Decision 703/2005/QD-TTG to give final approval of the location and scope of the project. This decision officially allows CAAV to conduct a feasibility study (F/S) for the project. The U.S. Trade & Development Agency (USTDA) is in the process of considering to partially fund the F/S for the first phase of the project in the period 2006-2010.

According to a very initial study on the project, in the first phase, the first terminal capable of handling 20 million passengers per year together with two runways (4,000 x 60 m) will be constructed and is expected to be operational during 2010-2015. The total investment in the first phase is estimated at USD $3 billion.

During the second phase, depending on the growth of the market, the airport will be expanded to handle up to 100 million passengers and 5 million tons of cargo per year with two more new runways and maintenance hangars. The investment in this phase is about USD $5 billion.

6.1.4 Other Airport Projects

In addition, CAAV also plans to upgrade the following domestic airports:

- **Na San Airport:** In July 11, 2005, the government approved a development master plan 2005 – 2020 for the Na San Airport which envisages that the construction of new passenger terminal with a capacity of 300,000 passengers per year, the expansion of the existing runway to 3,000 m – 45 m to accommodate Airbus 320/321s, and a parking bay of 18,000 sqm will be carried out and completed by 2010. By 2020, the terminal will be expanded to 7,000 sqm to be able handle 600,000 passengers per year and the runway will be extended to 3,500 m – 45 m, while the parking bay will be enlarged an extra 8,000 sqm to park three Boeing A320/321s at the same time. The total investment in the first phase is estimated at USD $38 million and the second phase at about USD $19 million. The first phase is expected to begin in 2006.

- **Dong Hoi Airport:** In August 2004, the government commenced the upgrade and expansion of this airport with a total investment of USD $14.2 million. Upon completion in 2006, this airport with a terminal capable of handling 300 passengers per hour will be able to accommodate Boeing 767s and Airbus 320/321s.

- **Cam Ranh Airport:** The Prime Minister issued the decision No. 301/QD-TTg to approve the upgrade and expansion of Cam Ranh Airport in 2002, which was long used as a Russian military air base. The project aims to convert the airport into civil use to substitute Nha Trang Airport that became overloaded in 2004. The first phase of this project was completed and put in use in May 2004. In the near future, depending the market growth, CAAV together with MAA is going to invest about USD $25 million to construct a new modern terminal with a total area of 15,000 sqm capable of handling about 300,000 passengers per year. Moreover, a new air traffic control tower, a runway lighting system and a maintenance hangar will also be built.

- **Chu Lai Airport:** A USD $5.3 million project was approved by the government in December 2003 to build a new terminal and upgrade the existing 3,050 m runway. This project was completed in early 2005 and the airport was officially put in operation in March 2005 with flights from/to Hanoi and HCMC three times per week. In its long term plan, CAAV wants to develop the Chu Lai into an international air cargo terminal serving the Chu Lai Economic Open Zone, Dung Quat IP and Dung Quat petroleum refinery. This long-term project is now in the nascent stages and CAAV together with MAA is in the process of seeking funds to conduct an F/S.

Local People Waiting in Front of an American Built Military Aircraft Revetments
to Witness the First Landing in Chu Lai Airport after 40 years of suspension

First Vietnam Airlines' Flight to
The Newly Opened Chu Lai Airport on Mar. 22, 2005

- **Lien Khuong Airport:** In July 2005, the government approved a proposal by a consortium of four Japanese leading companies including Mitsui, Mitsubishi, Sumitomo and Limtec to invest about USD $1.2 billion in the Dankia-Suoi Vang Resort in Dalat City. These companies will join forces to develop a world-class eco-tourist complex over 5,075 hectares there over the next few years. Once this project is undertaken, SAA is going to upgrade and expand the existing Lien Khuong Airport to meet surging number of visitors to the area.

- **Con Dao Airport:** About USD $6.6 million was invested in upgrading the Con Dao airport in 2003 and commercial flights operated by VASCO began in 2004. In October 2005, the Prime Minister approved a master plan for economic and social development for the Con Dao island. This plan envisions that Con Dao will be developed into a major international tourist destination in Vietnam. It is estimated that the number of visitors (currently less than 100,000 per year) to this island will increase to 250,000 in 2010 and 500,000 – 700,000 in 2020. This will entail the future development of the Con Dao Airport to be able to accommodate large jets such as Boeing and Airbus. At present, however, no specific plan for further development of this airport is proposed.

- **Phu Quoc Airport:** In 2002, work started on a USD $4.13 million project to upgrade and expand the existing Phu Quoc Airport on Phu Quoc Island, a tourist attraction in the south. The project includes building a passenger terminal, lengthening the runway by 700 meters and expanding the aircraft parking bay. At present, this airport is only able to handle small airplanes such as ATR 72s and Forker 70s. Similar to Con Dao Island, Phu Quoc will be developed into a major international tourist attraction according to an economic and social development master plan approved by the government in November 2005. This plan envisions the total number of visitors to Phu Quoc Island will reach about 2.3 million by 2020. As part of the plan, CAAV and SAA are planning to build a new international airport located in an area of 800ha in Duong To District. This new airport with a capacity of 2.5 million passengers per year will have a runway of over 3,000 meters, a parking bay able to accommodate 20 airliners, a modern terminal and a control and operation center. The total investment in this project is estimated at USD $170 million of which the sources are not yet identified. It is forecasted that the total tourists coming to the Phu Quoc Island will reach about 1 million by the year 2010.

- **Can Tho International Airport (Formerly Tra Noc Airport):** The Can Thoi Airport was built by the Americans before 1975 in an area of 321 hectares with one runway of 1,800 m long and 30 m wide, and was controlled by the Ministry of Defense until recently. To boost the economic and social development of the Mekong Delta area, which is home to the farming and aqua-culture of Vietnam, in mid 2005, the government approved an upgrade and expansion plan for the existing Can Tho Airport. The first phase of this project will require an estimated investment of USD $60 million, scheduled for completion in early 2008, which includes the upgrade and expansion of the existing runway (2,400 m long and 45 m wide), taxiway, parking bay, and the construction of a new passenger and cargo terminals of 18,000 sqm capable of handling 2 million passengers per year as well as a 2.75-hectare hangar. Upon completion, this airport will be able to accommodate Boeing 767s, Airbus A320s and A321s in both domestic and international flights. The finance for this project will come from SAA's fund (USD $35 million for the construction of a new terminal) and the state budget (USD $25 raised from government bonds for the construction of airport infrastructure). In the second phase, depending on the growth of the market, SAA is going to expand the airport facilities to handle bigger airliners such as Boeing 747s.

  To fund the further development of both the Phu Quoc and Can Tho Airport, the government plans to allow foreign companies to team up with local partners to develop and operate these two airports.

- **Ca Mau and Rach Gia Airport:** The construction of the gas - power - urea complex project valued at about USD $1.4 billion in Ca Mau as well as the development of Phu Quoc Island is making the upgrade and expansion of this existing airport more crucial. In a transportation master

plan for the Mekong Delta outlined by the Prime Minister in February 2005, both the Ca Mau and Rach Gia Airport were selected for upgrade and expansion by 2010. On November 11, 2005, SAA commenced the construction of a 1,900 sqm new passenger terminal in the Rach Gia Airport which, upon completion in April 2006, can handle 145,000 passengers per year. In 2004, the number of through-put passengers in this airport totaled 34,000. The total investment in this project is estimated at USD $3.3 million.

6.2 Projects, sub-sectors and product categories showing the best potential over the coming years

U.S. companies will find themselves most competitive in cargo and terminal equipment, ground support and handling equipment, airport safety and security systems, as well as air traffic control equipment and systems. U.S. firms are also very competitive in information technology and telecommunication systems, services and software for aerospace applications.

U.S. suppliers will find significant opportunities in a number of upcoming and ongoing major airport projects such as the Noi Bai, Tan Son Nhat, Danang and Long Thanh Airport as well as some smaller projects in which equipment procurements are normally open to both foreign and local suppliers.

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